# Periscope.

## ANATOMY OF THE NERVOUS SYSTEM.

**The Intra-Axial Course of the Auditory Tract.** By E. C. SPITZKA, M.D. (*New York Medical Journal*, Sept. 18th, 1886.)

The conclusions of this able article are based upon the anatomico-physiological method—a method with which most of us have become familiar through the works of Meynert, Gudden, and Forel. The method consists in a comparison of the relative development of certain nerve centres and nerve-tracts in animals having exalted or rudimentary special functions. Dr. Spitzka has studied the auditory tract of Cetaceans. These animals have rudimentary hind limbs, but a highly developed sense of hearing. Anatomically, we may therefore expect to find the pyramid (motor) tract poorly developed, but the auditory tract unusually well developed. These speculations are borne out by an examination of the cross-section of the brain isthmus immediately behind the post-optic lobes. This trans-section shows the following peculiarities: "There is no pyramid tract in the pons, and the middle part of the lemniscus appears to be absent. The brachium conjunctivum (Bindearm) appears crowded mesad by an enormous tract which corresponds to the lateral part of the human lemniscus. The continuation of the post. commiss. in the mesal division of the reticular field is seen . . . and of the inner division of the lemniscus nothing is seen except the very distinct bundle from the pes to the tegmentum. . . . The trapezium is relatively the largest in the animal kingdom. . . . The trapezium fibres can be seen massing into a longitudinal strand which . . . can be identified with a remarkably voluminous tract which occupies the situation of the lemniscus and passes into the posterior pair of the corpora quadrigemina." These hypertrophy experiments of nature show that the trapezium, the lateral (lower) part of the lemniscus, the posterior tubercles of the corpora quadrigemina, and the internal geniculate bodies are intimately related to the sense of hearing, corroborating the experiments of Baginsky and others, who found that these very parts would atrophy upon extirpation of the posterior or cochlear division of the auditory nerves. Spitzka concludes that the atrophy (experimental) and hypertrophy methods prove that the sound is transmitted by the following parts from the periphery to the cortical

centre: 1. Cochlea; 2. Post. division of eighth pair. 3. Trapezium of same side, then crossing to, 4. Part of lemniscus; 5. Post. pair of corpora quadrigemina; 6. Internal geniculate body; 7. Corona radiata; 8. Cortex of auditory field. B. S.

---

**The Cortical Origin of the Fibres of the Anterior Commissure in Man.** By DR. N. POPOFF. (*Neurol. Centralblatt*, No. 22, 1886.)

The best authorities are at variance regarding the anatomical relations of these fibres. Some (Burdach, Meynert, Gratiolet, and others) traced the fibres of the anterior commissure into the temporal and occipital lobes; others claimed that they were spread throughout the whole area of the gyrus fornicatus. Ganser claimed that certain fibres of the anterior commissure originated in the olfactory bulbs. Popoff now publishes a case of softening in the occipito-temporal region. On the left side the softening involved the whole of the gyrus lingualis and the posterior portion of the inner margin of the gyrus fusiformis; on the right side the softened area was of a similar extent. On both sides the softening had penetrated as far as the lateral ventricles. The posterior surface of the right cerebellar hemisphere, and a considerable part of the superficial portion of the pulvinar were also softened. These foci of softening were due to a well-developed cylindrical aneurism of the basilar artery, all branches of this artery exhibiting marked atheromatous changes, and both *arteriæ occipatales* (Duret) having been blocked by large thrombi.

Microscopical examination of the brain-axis revealed degeneration of all the fibres of the posterior division of the anterior commissure. Gratiolet's visual fibres, which are near one focus of softening, were slightly affected, while the bundles of fibres from the olfactory bulbs to the anterior commissure exhibited no distinct changes. It must be noted, in addition, that the temporal lobes were not involved in the disease. From these facts the author concludes, 1. That the posterior division of the anterior commissure is mainly instrumental in connecting the two gyri linguales, but that it is extremely doubtful whether any considerable portion of these fibres take their origin in the temporal lobes; 2. That there is a negative proof that there are no fibres from the gyri linguales to the medulla oblongata; this being in accord with Charcot's views that focal lesions in the occipital lobe are not followed by secondary degeneration in the crura cerebri. Prof. Flechsig adds a note, reporting a similar case in corroboration of the above conclusions. B. S.

---

## PHYSIOLOGY OF THE NERVOUS SYSTEM.

**Recent Experiments on the Time-Sense, and on the Perception of Space.**

There have appeared in MIND during the year 1886 several